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DEPARTMENT; NURSING

MATRIC NO; 18/MHS02/083

COURSE CODE; PHS 212

WRITE SHORT NOTES ON ANY TWO OF THE FOLLOWING; a) Spermatogenesis

b) Testosterone

c) Semen

d) Male orgasm

e) Male infertility

1) SPERMATOGENESIS

Spermatogenesis is the origin and development of the sperm cells within the male reproductive organs, the testes i.e it takes place in the testes. It is the process of formation of spermatozoa(sperms) from the primitive spermatogonic cells (spermatogonia). Spermatogenesis is initiated at puberty and it continues all through a man's life. The testes are are composed of numerous thin, tightly coiled tubules known as the **seminiferous tubules;** the spermatogenic cells or sperm cells are produced within the walls of this seminiferous tubules and they act as precursor cells of spermatozoa. These cells lie in between **sertoli cells (randomly scattered)** and are arranged in an orderly manner in 4 to 8 layers. The sertoli cells function to support and nourish the immature sperm cells by giving them nutrients and

blood products, they also help transport the young germ cells as they grow from the outer surface of the seminiferous tubule to the central channel of the tubule. The immature stem cells (spermatogonia) are all derived from cells called “stem cells” in the outer wall of the seminiferous tubules.

STAGES OF SPERMATOGENESIS

1) Proliferative stage (spermatogonium-46)
2) Growth stage (primary spermatocyte-46)
3) Maturation stage (secondary spermatocyte-23, spermatid-23)
4) Transformation stage (sperm-23)

stage of Proliferation; The spermatogonia divides by mitosis into **primary spermatocytes** and they migrate along sertoli cells towards the lumen of seminiferous tubule.

Stage of Growth; The primary spermatocyte grows into **a large cell.**

Stage of Maturation; In the first phase of this stage, each primary spermatocyte divides into two secondary spermatocytes. In the second phase, each secondary spermatocyte undergoes second meiotic division resulting in two smaller cells called **spermatids**.

Stage of Transformation; No further division occurs. Spermatids are transformed into **mature spermatozoa(sperms)** by means of spermeogenesis and released by spermination.

Spermatogenesis is influenced by various factors like;

a) Sertoli cells
b) Hormones (FSH, testosterone, estrogen, LH, GH, inhibin, activin)
c) Increase in body temperature
d) Diseases

2) SEMEN

Also called **seminal fluid,** the semen is a fluid that is emitted from the male reproductive tract and it contains sperm cells which are capable of fertilizing the female eggs. Most of the fluid in semen is made up of secretions from male reproductive organs. In the sexually mature human male, sperm cells are produced by the testes; they constitute only about 2 to 5 percent of the total semen volume. As sperm travels through the male reproductive tract, they are bathed in fluids produced and secreted by various tubules and glands of the reproductive system.

Semen contains; citric acid, free amino acids, fructose, enzymes, phosphorylcholine, prostaglandin, potassium, and zinc. (fructose is the largest component of the semen).

- 46 to 80 percent of the fluid is produced by the seminal vesicles.

- 13 to 33 percent by the prostate gland

- 5 percent from the testicles and epididymis
- 2 to 5 percent from bulbourethral and urethral glands

Small quantities of potassium and magnesium are essential to sperm motility (self-movement). Also, presence of adequate amounts of oxygen in the plasma, proper temperature, and a slightly alkaline PH of 7 to 7.5 helps in sperm motility.

The total volume of semen for each ejaculation of a human male averages between 2 and 5ml (0.12 to 0.31 cubic inch). Each ejaculation ranges normally from 20 to 300 million sperms.

CHARACTERISTICS OF SEMEN

a) Appearance; a normal semen sample has a grey-opalescent appearance.
b) Volume; normal semen volume per ejaculate ranges between 2 to 5ml. sperm constitutes approximately 10 percent of semen volume.
c) Smell; chlorine /ammonia/fish-like odor
d) Taste; slightly sweet due to a high content of fructose.
e) PH; the PH range should be 7.2 to 7.8. This is the normal PH of the body, if the PH is lower than 7.2, it may mean that there is a low sperm count or malformation in the reproductive tract. If the PH is above 7.8, it may indicate a urinary tract infection.